

South Coast Watersheds Limiting Factors Matrix Key - July, 2006

In the year 2000, the South Coast Watershed Council completed a Watershed Assessment for the ten watersheds shown on the attached matrix. To complete a synthesis of the available information, an interdisciplinary team met for two days in Gold Beach to examine interactions, list limiting factors, and prioritize action items. The team consisted of local specialists in geology, soils, hydrologic processes, water quality, riparian processes, and fisheries.

This matrix is now updated for 2006, with new information from our monitoring and assessment work over the past six years.

This matrix illustrates limiting factors in the watersheds, arranged from north to south, using the synthesis process developed by specialists, and then “ratified” by local watershed councils. The matrix is color-coded to express **known limiting factors** in red (high priority restoration), along with two other colors to express areas of uncertainty, or where we know we need more information.

The limiting factors are described briefly below. For more information, please see the complete assessments for each watershed, available on CD or online at www.currywatersheds.org

Estuary - Estuarine habitat is important for summer rearing and overwintering of most salmonid species. Estuaries are especially critical for chinook. Adequate circulation, water volume, water quality, cover, and complexity are required. (Water quality is addressed as a separate limiting factor.) Most of the river systems in Curry County have small, but intact, functional estuaries. Because our estuaries are so small, their importance as a part of the salmon life cycle is magnified.

Wetland - Wetland habitat is a crucial part of the coho salmon life cycle. Wetlands also perform other functions in moderating floods, storing and filtering water, capturing sediment and other nutrients, and providing cover and food for fish. In some areas they also provide off-channel fish habitat.

Migration Barriers - Barriers include structures such as dams and culverts that do not meet state guidelines for passage of adult and juvenile salmonids. Salmonids need to pass during spawning migration, while rearing, and while overwintering, to escape from high velocity flows. Barriers are limiting when habitat is inaccessible in a watershed, or when several small tributaries are inaccessible from the mainstem. Full, unimpeded access to off-channel areas is also important.

Water Quality – Good quality water is critical for all life stages of aquatic organisms and humans. Sampling by DEQ shows that water quality in these river systems ranges from excellent to poor, and indicates possible pollutant sources and which watersheds need improvement. The sampling frequency, number of sites, and range of parameters need to be increased so that we can better understand and address sources of pollution.

Water Quantity - Adequate summer stream flows are needed for fish and other aquatic organisms. In the past, in-stream water rights were established at values not to exceed the median stream flow. In-stream rights tend to be junior to most of the out-of-stream water rights. Opportunities for restoring flow include water conservation, lease, acquisition, or forfeiture of existing water rights, and regulation of junior water rights when streamflows drop below the instream water right.

Channel Modification - Typical channel modifications include gravel extraction, channel straightening and bank armoring, and channel relocation. This module was not formally completed for the 2000 watershed assessment, but known modifications are listed. Channel modification (and the attendant loss of complexity) has become recognized in the last six years as a major limiting factor for coho.

Hydrologic Function - Impermeable and compacted surfaces cause excessive runoff and can augment the size of peak flows. Disconnection of floodplains, side channels, and wetlands prevent floodwaters from being stored, and then released more slowly over time. Ditches and improperly-drained road surfaces also speed runoff to channels. Increased runoff causes erosion, transports pollutants, and may alter channel and habitat characteristics in extreme cases.

Riparian Shade - Streamside shade is needed to minimize exposure to solar radiation, a dominant influence on high stream temperatures. Reaches with high potential increases in shade were identified with a *SHADOW* model. Improvements can include planting, thinning, and converting alder-dominated stands to conifer, where appropriate. Off-channel watering systems can be an important part of projects to address this limiting factor. See also potential large wood.

Large Wood (*Potential and Stored*) - Large wood helps stabilize channels; promotes sediment storage and revegetation; develops pools and habitat complexity; increases roughness to reduce water velocity; provides cover and traps woody material; and enhances macroinvertebrate diversity and processing of nutrients & organic matter. Riparian reaches that lack mature trees, or high reproduction potential, have low potential for large wood recruitment. Habitat surveys indicate where large wood is not present (stored) in stream channels. The IMST report indicates lack of large wood is a major limiting factor in our area of both the Oregon Coast area (north of Blanco) and the Klamath Mountains Province (south of Cape Blanco to the California border.).

Sediment (*Potential and Stored*) – Excessive volumes of both fine- and coarse-grained sediments can be limiting. Fine-grained sediment impairs filter-feeding organisms, circulation of dissolved oxygen in redds, and sight-feeding visibility. Gill abrasion may occur in extreme cases. Coarse-grained sediment increases gravel bars while decreasing pools for rearing. Shallower, wider (aggraded) channels also heat more readily.

Potential Sediment - Sub-watersheds are ranked by density of stream crossings and roads on steep slopes. Road inventory determines priorities for treatment based on probability and consequences of slope failure and erosion.

Stored Sediment - Channel deposits tend to be colonized by short-lived species such as alder. When alder stands decline, sediment transport reactivates unless stabilized by promoting other riparian species with silvicultural treatments or by adding large wood.

Noxious Weeds - Invasive species limit the restoration of native riparian and wetland vegetation. In addition, when large areas of gorse burn, valuable lowland riparian stands can be lost to an intense fire. Exotic aquatic weeds displace native species, modify lake ecosystems, and may cause impaired water quality.